Exploring Technology – Course Overview

Technology and Engineering

This is the 2006 Resource for the Exploring Technology curriculum. This course is available for 7th – 9th grade students. The target audience is the 8th grade student.

Through this activity-centered curriculum students are exposed to Technology and Engineering Related activities. These learning experiences need to be exploratory in nature. In Exploring Technology there are 9 standards. Each course will cover the 1st standard; it will also cover at least 4 of the remaining standards. Below is an example of what an 18 week semester might look like:

Weeks	**Standard**
Weeks 1 – 2 (2 weeks)	Standard 1
Weeks 3 – 6 (4 weeks)	Choose one standard from Standard 2 - 9
Weeks 7 – 10 (4 weeks)	Choose another standard from Standard 2 - 9
Weeks 11- 14 (4 weeks)	Choose another standard from Standard 2 - 9
Weeks 15 – 18 (4 weeks)	Choose another standard from Standard 2 – 9

A total of 5 standards are covered.

Each standard chosen should be between 2 weeks and 6 weeks in duration. This is based on a semester course.

Teachers need to carefully choose the videos, DVDs, presentation, and activities that they will use to maximize the learning experience of each student. The Technology Student Association (TSA) competitive activities can be used where appropriate.

All courses will cover standard 1

Standard 1: Through activity-based education students will learn basic **safety practices** and learn basic **measuring skills** and **design skills**.

Objectives:

1. Students will learn and use basic safety rules for the tools, the equipment, and the facilities that will be used in the course.
2. Students will learn and use measuring skills
3. Students will learn basic design skills: i.e. sketching orthographic drawings, sketching pictorial drawings, creating a materials list.
4. Students will explore related careers.

- Example Activities:
  - Measuring
  - Safety Lecture and Test
  - Sketching

All courses will cover at least four of the remaining standards, standard 2 – standard 9

Standard 2: Through activity-based education students will explore **medical technologies** in our world.

Objectives:

1. Students will explore the nature of medical technologies.
2. Students will explore how medical technologies affect our society.
3. Students will use basic design concepts in a medical technologies activity.
4. Students will participate in activity based leaning activity to explore medical technologies.

- Example Activities:
  - ??
  - ??
  - ??

Standard 3: Through activity-based education students will explore **agricultural and related biotechnologies** technologies in our world.

Objectives:

1. Students will explore the nature of agricultural and related biotechnologies.
2. Students will explore how agricultural and related biotechnologies affect our society.
3. Students will use basic design concepts in an agricultural and related biotechnologies activity.
4. Students will participate in activity based leaning activity to explore agricultural and related biotechnologies.

- Example Activities:
  - Biotechnology
  - Environmental – Water Purification
  - GPS – GIS
  - Greenhouse
  - Hydroponics
  - Recycling
  - Sim Farm
  - ??

Standard 4: Through activity-based education students will explore **energy and power technologies** in our world.

Objectives:

1. Students will explore the nature of energy and power technologies.
2. Students will explore how energy and power technologies affect our society.
3. Students will use basic design concepts in an energy and power technologies activity.
4. Students will participate in activity based leaning activity to explore energy and power technologies.

- Example Activities:
  - Electronics / Electricity
  - Energy Conversion and Storage
  - Fluid Power
  - Internal Combustions Engines
  - Solar Power
  - Steam Power
  - Water Power
  - Wind Power
  - ??

Standard 5: Through activity-based education students will explore **information and communication technologies** in our world.

Objectives:

1. Students will explore the nature of information and communication technologies.
2. Students will explore how information and communication technologies affect our society.
3. Students will use basic design concepts in an information and communication technologies activity.
4. Students will participate in activity based leaning activity to explore information and communication technologies.

- Example Activities:
  - Animation
  - Architecture Design
  - CAD – Drafting
  - Desk top Publishing
  - Digital
  - Audio
  - Still Photography
  - Video
  - Film Photography
  - Printing
  - Silk Screening
  - Telecommunication
  - Web design and exploration
  - 3D Modeling
  - ??

Standard 6: Through activity-based education students will explore **transportation technologies** in our world.

Objectives:

1. Students will explore the nature of transportation technologies.
2. Students will explore how transportation technologies affect our society.
3. Students will use basic design concepts in a transportation technologies activity.
4. Students will participate in activity based leaning activity to explore transportation technologies.

- Example Activities:
  - Aviation – Aerospace
  - Boat Hull (Hydroplane or Hydrofoil)
  - CO2 Cars
  - Hover Craft
  - Mouse Trap Cars
  - Rocketry
  - Wind tunnel
  - ??

Standard 7: Through activity-based education students will explore **manufacturing technologies** in our world.

Objectives:

1. Students will explore the nature of manufacturing technologies.
2. Students will explore how manufacturing technologies affect our society.
3. Students will use basic design concepts in a manufacturing technologies activity.
4. Students will participate in activity based leaning activity to explore manufacturing technologies.

- Example Activities:
  - Copyright and Patent?
  - CNC
  - Custom Production
  - Material Processes
  - Mass Production - Sheet metal Car – Quality Control
  - Robotics – work cell
  - ??

Standard 8: Through activity-based education students will explore **construction technologies** in our world.

Objectives:

1. Students will explore the nature of construction technologies.
2. Students will explore how construction technologies affect our society.
3. Students will use basic design concepts in a construction technologies activity.
4. Students will participate in activity based leaning activity to explore construction technologies.

- Example Activities:
  - Architectural Modeling
  - Basic Interior design
  - Bridge Design and Construction
  - Truss Design and Construction
  - Tower Design
  - Urban Planning
  - ??

Standard 9: Through activity-based education students will explore how math and science are used in **Engineering and Engineering technologies** in our world.

Objectives:

5. Students will explore the nature of engineering technologies.
6. Students will explore how engineering technologies affect our society.
7. Students will use basic design concepts in an engineering technologies activity.
8. Students will participate in activity based leaning activity to explore engineering technologies.

- **Example Activities: (Note: all activities must have strong math and science applications)**
  - 3D Modeling
  - Architectural Modeling
  - Aviation – Aerospace
  - Biotechnology
  - Boat Hull (Hydroplane or Hydrofoil)
  - Bridge Design and Construction
  - Energy Conversion and Storage
  - Environmental – Water Purification
  - Materials Testing
  - Mouse Trap Cars
  - Power systems
  - Restraint systems (Crash)
  - Rocketry
  - Tower Design
  - Truss Design and Construction
  - Wind tunnel
  - ???